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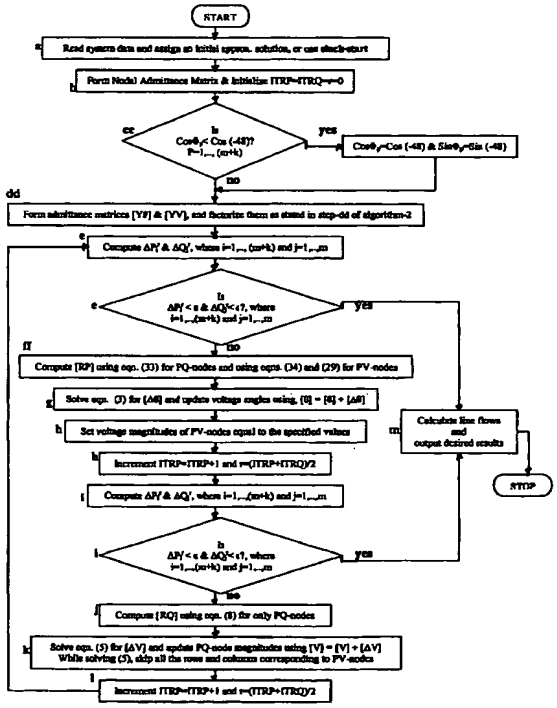
(54) Title: SYSTEM OF SUPER SUPER DECOUPLED LOADFLOW COMPUTATION FOR ELECTRICAL POWER SYSTEM



Flow-chart of SSDL-YY solution algorithm-2

(57) Abstract: Load-Flow computations are performed in real-time operation/control and in on-line/off-line studies of electrical power systems. Three Load-Flow computation methods of the present invention are the best versions of many simple variants with almost similar performance. The Super Super Decoupled Loadflow (SSDL-YY) method and its many variants are characterized in limiting rotation angle applied to nodal real and reactive power mismatches to the maximum of -48 degrees instead of -36 degrees, replacing network shunt element $-2b_pCos\Phi_p$ by $[2(QSH_pCos\Phi_p - PSH_pSin\Phi_p)/V_s^2]$ or by $[-b_pCos\Phi_p + (QSH_pCos\Phi_p - PSH_pSin\Phi_p)/V_s^2]$ and using the dividing term V^2 instead of V in the modified nodal real power residues [RP] in the prior art Fast Super Decoupled Loadflow (FSDL) method. The other two Super Super Decoupled Loadflow: BGX' version (SSDL-BGX') and $X'G_{pv}X'$ version (SSDL-$X'G_{pv}X'$) are characterized in the use of simultaneous (1V,1θ) iteration scheme thereby reducing the mismatch computation once compared to two mismatch computations in the prior art method employing successive (1θ,1V) iteration scheme. The invented methods are also characterized in the different definition of gain matrices as detailed in the steps of algorithm-2, algorithm-3 and algorithm-4 of carrying out of the inventions. (steps-cc, -dd, and ff in Fig.2; steps-ccc, -ddd, -fff, -ggg and -hhh in Fig.3; steps-dddd and -ffff in Fig. 4) leading to some speed-up of the invented methods.

WO 2004/023622 A2

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